

PLANTS

Rydberg's milkvetch (*Astragalus perianus* Barneby)

Rydberg's milkvetch belongs to the pea family (Fabaceae) and is an herbaceous perennial from a subterranean, branching caudex. The stems, 3-12 cm long, are prostrate, short, and leafy. Leaves are 1-3 cm long and have 7-19 leaflets. Flowers are whitish and tinged with pink or purple. The pods are ascending to declined, bladdery, inflated, sessile, ovoid and unilocular. This species occupies harsh sites at upper elevations. Habitat needs are described primarily as openings in spruce-fir, but the species also occurs with vasey sagebrush, black sagebrush, alpine krummholz, and open aspen-fir-mahogany. Substrates include igneous intrusive gravels, volcanic gravel or clayey soils at elevations ranging from 7,200 to 11,500 feet (Atwood et al. 1991, Welsh et al. 1993).

Tew (1988) provided the following information about this species' description and life history. The flowering and fruiting period extends from June to September, and the pods are water and wind dispersed. Fire does not kill the plants and may even be used to improve habitat for Rydberg's milkvetch. Substrate and elevation appear to be dominant factors affecting distribution. Associated vegetation is typically sparse with an open appearance because of shallow rocky soils.

Astragalus perianus populations could be threatened by off-road vehicle use, grazing, mining, or severe erosion. However, most existing populations do not appear to be in serious danger. Some populations are near salting grounds where grazing and trampling occur. Other individuals of Rydberg's milkvetch may be found growing in the middle of gravel roads where competition has been eliminated. Too much cover has a tendency to crowd this species out of its niche. Mining activities are limited in all areas where the populations are presently known to exist (Tew 1988).

Rydberg's milkvetch (*Astragalus perianus*) was first collected in the mountains north of Bullion Creek near Marysville, Piute County, Utah in 1905 by Per Axel Rydberg's and Carlton. This plant was not formally described until 1964 when Rupert C. Barneby of the New York Botanical Garden published it in *Memoirs of the New York Botanical Garden* 13: 973. Because of the lack of collections of this plant and general lack of information on its distribution, the Smithsonian Institution noted that this plant could possibly be extinct in their 1975 report (Federal Register Vol. 43, No.81). In June of 1975, Welsh and Murdock collected this species in Garfield County. This population was found on Mt. Dutton of the Dixie National Forest. In 1976, specimens from the 1905 locality in the Tushar Mountains (Fishlake National Forest) were rediscovered and collected (Federal Register Vol. 53, No. 196). On June 16, 1976 (Federal Register Vol. 41, No. 117), Rydberg's milkvetch was proposed for listing as Endangered by the U.S. Fish and Wildlife Service. On March 31, 1978, Stanley L. Welsh published *Endangered and Threatened Plants of Utah: A Reevaluation* in which he recommended listing Rydberg's milkvetch as Threatened. In 1978, Rydberg's milkvetch was federally listed as Threatened by the U.S. Fish and Wildlife Service (Federal Register Vol. 43). At this time, this plant was only known from two populations.

In 1981, Rupert C. Barneby reevaluated specimens of *Astragalus perianus* and a species it closely resembles, *A. serpens*. Upon re-examination, he concluded that several of the specimens previously identified as *A. serpens* were misidentified. Barneby annotated these specimens to *A. perianus*. These collections were from Kane, Iron, and Piute Counties and greatly expanded the distribution of Rydberg's milkvetch. In 1982 and 1983, a management plan for Rydberg's milkvetch was created and approved by the U.S. Forest Service. Inventories and monitoring studies were established and implemented over the next several years (Federal Register Vol. 53, No. 196). "From 1984 through 1987...Twelve major population centers were located and mapped. These populations cover over 2,000 acres in six counties

on six major mountains and plateaus in south-central Utah: the Tushar Mountains, Sevier Plateau, Markagunt Plateau, Fish Lake Plateau, Mount Dutton, and Thousand Lake Mountain” (Federal Register Vol. 53, No. 196). In 1986, Rydberg’s milkvetch was listed as a Management Indicator Species in the Fishlake National Forest Land Resource Management Plan. Because it was federally listed as threatened (Fishlake LRMP II-32, Table II-10). At the time the Fishlake LRMP was prepared, only 4,000 individuals were known to occur on the forest (Fishlake LRMP II-29).

On October 11, 1988, delisting of Rydberg’s milkvetch was proposed by the U.S. Fish and Wildlife Service (Federal Register Vol. 53, No. 196). This proposal was based on a much wider distribution than previously known for this species. Conservative estimates for the 12 known populations indicated well over 75,000 individuals and could possibly have been closer to 200,000 individuals (Federal Register Vol. 53, No. 196). In 1989, 13 populations of Rydberg’s milkvetch had been found with over 300,000 individuals estimated (Federal Register Vol. 54, No. 177). Rydberg’s milkvetch was subsequently delisted from its Threatened status on September 14, 1989 by the U.S. Fish and Wildlife Service (Federal Register Vol. 54, No. 177). Rydberg’s milkvetch was then immediately placed on the USFS, Intermountain Region Sensitive Species List for approximately 5 years. On April 29, 1994, Rydberg’s milkvetch was removed from the Intermountain Region Sensitive Species List.

Trend

As a result of the U.S. Forest Service Management Plan approved in 1983, two Rydberg’s milkvetch monitoring transects were established and monitored by Dr. Duane Atwood and Bud Alford. These were located in the Bullion Canyon and Mt. Brigham area of the Tushar Mountain Range, Fishlake National Forest.

The Bullion Canyon transect was read on September 1, 1983. A total of 77 Rydberg’s milkvetch plants were counted in monitoring 10 plots along a transect line. All age classes were represented. This transect was re-monitored on August 5, 2002 by Mark Madsen and Jeremy Gwin. A total of 21 young and mature age class Rydberg’s milkvetch plants were counted in 10 monitoring plots along the transect line. Two of the designated age classes (seedling and decadent) were absent from the monitoring plots.

The Mt. Brigham transect (on privately-owned land) was read on September 2, 1983. A total of 194 Rydberg’s milkvetch plants were counted in 10 monitoring plots along the transect line. All age classes (except for decadent) were represented. This transect was re-monitored on August 6, 2002 by Mark Madsen and Jeremy Gwin. A total of 69 Rydberg’s milkvetch plants were counted in 10 monitoring plots along the transect line. All age classes (except for decadent) were represented.

Between 1983 and 2003, Rydberg’s milkvetch has declined in numbers along both monitoring transects indicating a downward trend. However, both 5-10 acre populations in Bullion Canyon and Mt. Brigham were noted as having an estimated 100 – 1000 of individuals in each in area 2002. The population in Bullion Canyon was estimated to be between 800 – 1000 individuals in 1983.

A new monitoring transect for Rydberg’s milkvetch was established on August 13, 2002 by Mark Madsen, Steve Walters, and Jeremy Gwin. This transect was placed on Fishlake National Forest Land in the Edna Peak area of the Tushar Mountains. A total of 86 plants were counted in 10 monitoring plots along the transect line. All age classes (except for decadent) were represented. The population size was estimated at 10 acres with 500+ individuals.

The following paragraphs documented additional monitoring completed by Terry Miller in collaboration with David Tait, and Robert Campbell.

Surveys were conducted for *Astragalus perianus*, Rydberg's milkvetch, during the months of June and July, 2002. Known populations were relocated and resurveyed in order to establish trend data for the species. Surveys consisted of surveying polygons delineated by previous botanists who worked with the species. Population visits were documented by completing the rare species element occurrence form and taking photographs and GPS locations.

Populations located on the Richfield District were in the Dry Creek Canyon area (7/29/85, Higgins) and above Willow Spring (7/29/85, Higgins). The Dry Creek Canyon population was estimated to have approximately the same population size (about 2000 individuals) as previously determined. The population above Willow Spring was also found to have a stable population size (at least 10,000+ individuals). A large amount of potential habitat was found for the species in the general area. One new population of this species was located in the general area of Dry Creek Canyon during the current surveys.

Populations were searched for on the Loa District in two separate locations, the Mytoge Mountain area (8/21-22/85, Atwood) and west of Mill Meadow Reservoir (8/21-22/85, Atwood). Population size for the Mytoge Mountain population was estimated to be lower (about 2000 to 3000 individuals) than the estimated 10,000+ individuals located during the delisting process (delisted effective 10/16/89). The recent survey of the population west of Mill Meadow Reservoir did not locate any plants even though a large area at the site was searched. The original estimate of this population size was 1,000-10,000 individuals. Large parts of this area had been chained in 1987 as part of a range rehabilitation treatment. Although given the habitat preference for *A. perianus*, this treatment is not thought to be solely responsible for the disappearance of individuals from this population. Two days were spent surveying for this population.

One day was spent surveying for the population at Lousy Jim Creek on the Beaver District. This small population (about 500 individuals, 8/26/84, Taye) was not relocated. Possibly a more intensive survey could relocate this population. The area contained a significant amount of potential habitat that was not searched during this 2002 survey.

While some populations are stable, others had fewer plants of *A. perianus*. Some populations were not even relocated. However, the dry weather this summer may be a contributing factor to the lower numbers. Populations of other common species seem to be smaller than those expected for years of more normal precipitation (T.R. Miller, personal observations).

There are 31 known locations on the Beaver, Loa, and Richfield Ranger Districts, which contain approximately 95,000+ individuals. Based on the data discussed above, Rydberg's milkvetch is stable and viable across the Forest.